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## Performance of Downlink CDMA-SFBC Over Weibull Fading Channels

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**Abstract:** In this paper, we consider code division multiple access (CDMA) - space frequency block coded (SFBC) downlink system and evaluate its performance over independent and identically distributed (i.i.d) Weibull fading channels. Specifically, we derive closed form bit error rate (BER) expressions for the M-ary quadrature amplitude modulation (MQAM) and M-ary phase shift keying (MPSK). We study the outage probability of the system by numerically inverting the Laplace transform of the cumulative distribution function of the instantaneous signal to noise ratio. The derived expressions are evaluated considering different amounts of channel estimation error, different M-ary size, different fading severities and different SFBC forms. Numerical results are provided to show the tradeoff between the different system parameters. The derived expressions can be used to assign channels to different users in a cross-layered fashion based on the conditions of their channels.